**Foundations of Algebra** 

Day 1: Algebraic Expressions

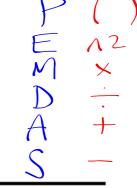
Notes

### Day 2 - Evaluating Expressions

**Order of Operations** is the order to which you perform operations in a math problem. Order of operations is CRUCIAL for all types of Algebra 1 topics – linear equations, quadratic equations, etc.

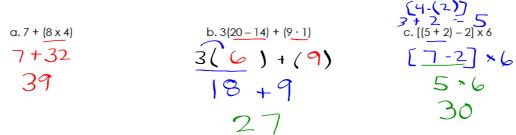
## **Order of Operations**

- 1. Parenthesis or Grouping Symbols
- 2. Exponents
- 3. Multiplication or Division whichever comes first
- 4. Addition or Subtraction whichever comes first



## Order of Operations (Parenthesis)

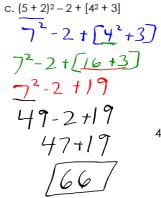
- Things to Consider
  - o Brackets can be used as parenthesis: 3 x [7 + 1]
  - o You ALWAYS work from inside parenthesis to outside parenthesis:  $3 + [4 (2 \times 1)]$





The exponent tell you how many times you are multiplying a number times itself:  $4^3 = 50000$  a.  $4(1+3)^2$  b.  $70-3-(4\div2)^2$  c.  $(5+2)^2-2+[$ 





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#### Order of Operations - Multiplication & Division

- Things to Consider
  - You multiply or divide depending on whichever operation comes first as you work from <u>left to</u> right.

# Order of Operations - Multiplication & Division Add 1 Sub +/\_

- Things to Consider
  - You add or subtract depending on whichever operation comes first as you work from left to right.

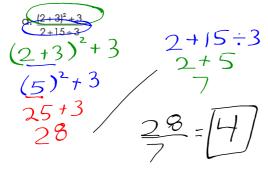
b. 
$$6 + 2(4 + 1)^2$$

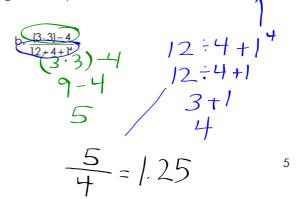
c. 
$$3^2 \div 3 + 4 \times 4 - 2$$

1.1.1.1=1

#### Order of Operations - Fractions

- Things to Consider
  - o Simplify everything in the numerator using order of operations
  - o Simplify everything in the denominator using order of operations
  - o Divide to find answer





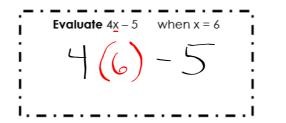
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Day 1: Algebraic Expressions

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#### **Evaluating Expressions**

When you evaluate an expression, you are replacing the variable with what the variable equals:



Practice: Evaluate the following expressions if m = 7, r = 8, and t = -2.

$$\frac{\frac{b \cdot \frac{r}{t}}{8}}{-2}$$

$$\begin{array}{c}
\text{c. 3m-5t} \\
3 (7) - 5 (-2) \\
21 + 10 \\
\hline
31) \\
\hline
4 - 32 \\
\hline
1-28)
\end{array}$$

Application: Answer the following questions:

1. You earn 15n dollars for mowing n lawns.

a. How much do you earn for mowing 1 lawn? 15 (1) = 15



2. After m months, the length of a fingernail is 10 + 3m millimeters.

$$10+3m$$
 (mm)

a. How long is the fingernail, in centimeters, after 8 months?

b. How long is the fingernal after three years?

$$10 + 3(8)$$

$$10 + 24 = 34 \text{ mm} = 3.4 \text{ cm}$$

$$10 + 3 \text{ m}$$

$$10+3m$$
 $10+3(36)$ 

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